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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,846	10/22/2001	Atsushi Koike	839.449	8378
5514	7590	10/12/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			KIELIN, ERIK J	
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NEW YORK, NY 10112			PAPER NUMBER	

2813

DATE MAILED: 10/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/982,846

Applicant(s)

KOIKE ET AL.

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 5-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This action responds to the Amendment filed 26 July 2004.

#### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 8-97161 (**Takai**).

Regarding claim 1, **Takai** discloses a film-forming method for forming a deposited film on a substrate **205, 305** arranged in a substantially enclosed film-forming vessel (Figs. 2, 3) by means of plasma CVD, said film-forming vessel being provided with a raw material gas introduction means **211, 302** and an exhaustion means **208, 308**, said film-forming method comprising the steps of

introducing a raw material gas comprising at least a hydrogen gas and a silicon-containing raw material gas into said film-forming vessel through said raw material gas introduction means (Tables 2, 4);

maintaining an inner pressure of said film-forming at a desired value by means of said exhaustion means (Tables 2, 4); and

introducing a high frequency power into said film-forming vessel through a discharge electrode **213, 313** provided in said film-forming vessel to generate a plasma in a plasma

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generation region **212, 312** between said substrate **205, 305** and said discharge electrode **213, 313** in said film-forming vessel, thereby forming said deposited film on said substrate maintained at a desired temperature using heater **207, 307**,

characterized in that the formation of said deposited film on said substrate is performed while repetitively applying a periodicity voltage having at least two different waveform components (20 to 450 MHz component and DC bias voltage component) having a different amplitude to an auxiliary electrode **202, 302** arranged at a position in said plasma generation region of said film-forming vessel. (See at least paragraph [0014].)

Regarding claim 2, it is seen to be inherent that the periodicity voltage has (i) a waveform component having an amplitude capable of generating mainly a radical of a silicon-containing compound and (ii) a waveform component having an amplitude capable of forming mainly a radical of hydrogen. (See Table 2.) Because the source of both hydrogen and silicon can be silane ( $\text{SiH}_4$ ), the periodicity voltage components (i) and (ii) can be the same component. There exists no requirement that the components (i) and (ii) be different. Accordingly, the component that dissociates silane produces mainly a radical of silicon and mainly a radical of hydrogen by breaking one Si-H bond of silane.

Regarding claim 3, **Takai** discloses the auxiliary electrode **202, 302** is arranged such that said auxiliary electrode **202, 302** is opposed to a film-forming surface of the substrate **205, 305** and is situated at a position between the substrate **205, 305** and the discharge electrode **213, 313**. (See Figs. 2 and 3.)

Regarding claim 4, **Takai** discloses the auxiliary electrode **208** is arranged to be in parallel to the substrate **205, 305** and perpendicular to a flowing direction of the raw material gas

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which flows from the raw material introduction means **211, 302** toward the exhaustion means **208, 308** in the film-forming vessel. (See Figs. 2 and 3.)

*Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Takai** in view of US 4,795,529 (**Kawasaki et al.**).

The prior art of **Takai**, as explained above, discloses each of the claimed features.

In the event, however, it is believed that the DC component in **Takai** is not a “waveform” component --a point to which Examiner does not concede-- then this may be a difference.

However, **Kawasaki** teaches a plasma deposition characterized in that the formation of said deposited film on said substrate is performed while repetitively applying a periodicity voltage having at least two different waveform components having a different amplitude to an auxiliary electrode. (See Figs. 3, 8, 10, 12, and 17.) **Kawasaki** teaches that the two components give more control of the plasma and thereby improve the results of the plasma deposition (Abstract.)

It would have been obvious for one of ordinary skill in the art, at the time of the invention to apply the two waveform components of **Kawasaki** to the auxiliary electrode of **Takai** to give improved control of the plasma, in particular improved control of the acceleration of the ions

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toward the substrate. There exists a reasonable expectation of success since one of the two components applied to the electrodes in each of **Takai** in **Kawasaki** is for the same purpose of accelerating the ions toward the substrate.

***Response to Arguments***

5. Applicant's arguments filed 26 July 2004 have been fully considered but they are not persuasive.

Applicant argues that Examiner admits that a DC waveform is not a waveform. Examiner respectfully but emphatically disagrees. Examiner nowhere made such admission. Applicant is requested to provide evidence of such admission. By contrast to Applicant's assertion, Examiner stated,

**“In the event, it is believed that the DC component in **Takai** is not a “waveform” component, then this may be a difference.”** (Emphasis added.)

This does **not** constitute any admission, but rather permits a possible alternative perspective to DC waveform. It is very clear from the content of the rejections that Examiner expressly believes a DC waveform to be a waveform.

Further in this regard, Applicant appears to argue that the language in the **specification** distinguishes the claims over **Takai**, stating,

**“Applicants have taught that a voltage lapse between adjacent peaks imparts amplitude (page 21, lines 20-22). Applicants have also distinguished direct current fields from periodic voltage having a waveform of a different amplitude. See page 28, line 4 and page 36, lines 8-23.”**

This is not **claimed**. By contrast the **claims** state,

“a periodicity voltage having at least two different waveform components having a different amplitude to an auxiliary electrode.”

There is no requirement, as presently written that BOTH components are periodic. Rather the claims recite “**a** periodicity voltage” (emphasis added). Clearly the AC waveform component provides a periodicity to the composite waveform. Also, a DC waveform necessarily has (1) an amplitude, and (2) an amplitude different from that of a periodic waveform. The amplitude of a periodic waveform varies with time while that of a constant waveform (i.e. the DC waveform) does not. Accordingly the periodicity voltage in Takai has two waveform components each with different amplitudes. That which Applicant intends the claims to mean must be in the **claim language itself** --not imported from limitations from the **specification** because importation of limitations of the specification into the claims is forbidden.

In this regard, claim interpretation is important. Claim interpretation **must** begin with the language of the claim itself. See *Smithkline Diagnostics, Inc. v. Helena Laboratories Corp.*, 859 F.2d 878, 882, 8 USPQ2d 1468, 1472 (Fed. Cir. 1988). **First, and most important**, the language of the claim defines the scope of the protected invention. *Yale Lock Mfg. Co. v. Greenleaf*, 117 U.S. 554, 559 (1886) (“The scope of letters patent must be limited to the invention covered by the claim, and while the claim may be illustrated it cannot be enlarged by language used in other parts of the specification.”); *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396, 155 USPQ 697, 701 (Ct. Cl. 1967) (“Courts can neither broaden nor narrow the claims to give the patentee something different than what he has set forth [**in the claim**].”). See also *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 419 (1908); *Cimiotti Unhairing Co. v. American Fur Ref. Co.*, 198 U.S. 399, 410 (1905). Accordingly, “resort must be had in the first instance to

the words of the claim” and words “will be given their ordinary and accustomed meaning, unless it appears that the inventor used them differently.” *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759, 221 USPQ 473, 477 (Fed. Cir. 1984).

Further in this regard, it has been held that the general claim construction principle that **limitations found only in the specification of a patent or patent application should not be imported or read into a claim** must be followed. See *In re Priest*, 582 F.2d 33, 37, 199 USPQ 11, 15 (CCPA 1978). One must be careful not to confuse impermissible imputing of limitations from the specification into a claim with the proper reference to the specification to determine the meaning of a particular word or phrase recited in a claim. See *E.I. Du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433, 7 USPQ2d 1129, 1131 (Fed. Cir.), *cent. denied*, 488 U.S. 986 (1988). As stated by the court in *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d -523, 1529 (Fed. Cir. 1998) “[t]he name of the game is the claim.” Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the specification are not to be read into the claims. *In re Enter*, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. Cir. 1985).

Applicant's argues that Kawasaki does not make up the deficiencies of Takai. Since Takai is not deficient in disclosing the claims, as presently written, this argument is moot.

Applicant also argues that Kawasaki does not apply the periodicity voltage to an auxiliary electrode in the plasma space. This would not deter one of ordinary skill from gaining the benefit of increased control over a plasma by applying the composite waveform to another plasma producing/controlling electrode, such as that auxiliary electrode of Takai. Accordingly the combination is proper and motivated.



***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached on 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erik Kielin

Primary Examiner

7 October 2004